

10 MK slipping loops in an X-class flare observed by SDO/AIA

J. Dudík^{1,2}, M. Janvier³, G. Del Zanna¹, G. Aulanier³, M. Karlický⁴, H. E. Mason¹, and B. Schmieder³

¹ – Dept. of Applied Mathematics and Theoretical Physics, CMS, University of Cambridge, Wilberforce Road, Cambridge CB3 0WA, United Kingdom

² – DAPEM, Faculty of Mathematics, Physics and Informatics, Comenius University, Mlynská Dolina F2, 842 48 Bratislava, Slovak Republic

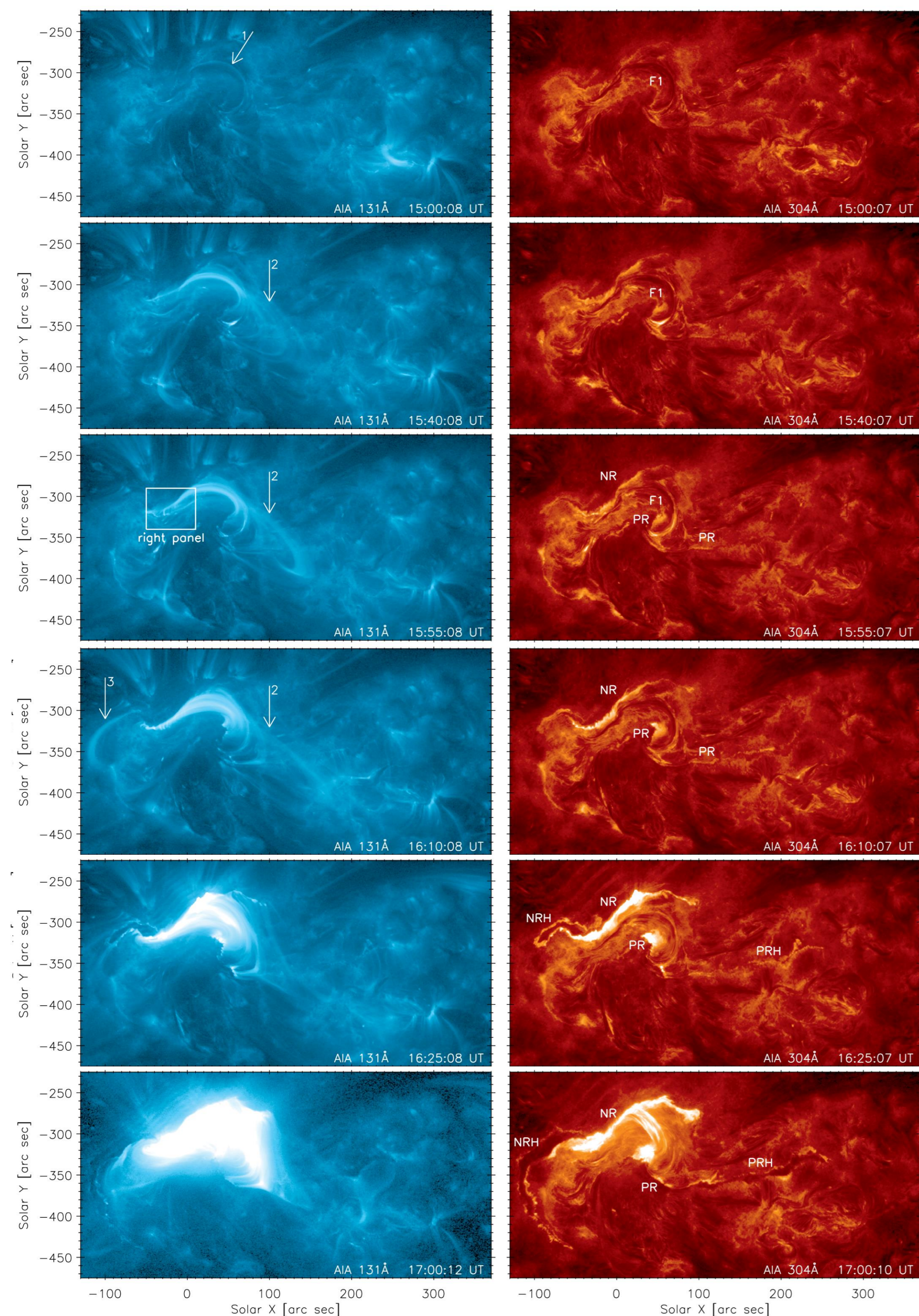
³ – Laboratoires d'Etudes Spatiales et Instrumentation Astrophysique, Observatoire de Paris, UMR 8109 (CNRS), 921 95 Meudon, France

⁴ – Astronomical Institute of the Academy of Sciences of the Czech Republic, Fričova 298, 251 65 Ondřejov, Czech Republic

Introduction

- Magnetic reconnection generally difficult to observe
- In 3D, reconnection generally takes place at quasi-separatrix layers (QSLs) This reconnection should be **slipping** – field lines continually move
- **Field line slipping is expected in the 3D MHD models of eruptive flares with torus-unstable, erupting flux ropes (Aulanier et al. 2010, ApJ 708, 314)**
- **We present AIA observations of slipping loops during an X-class flare**

Flare Overview

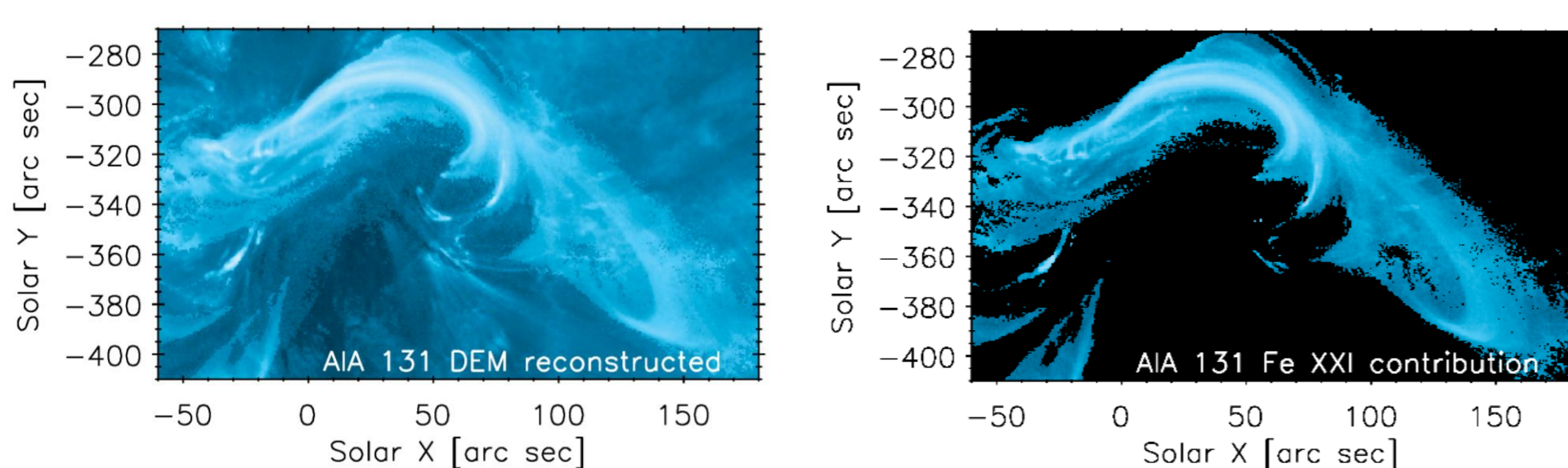


- F1** – active region filament
- Arrow 1** – first flare loop
- Arrows 2, 3** – erupting hot loops (10 MK)
- NR** – negative-polarity ribbon
- PR** – positive-polarity ribbon
- NRH** – hook of the NR
- PRH** – hook of the PR

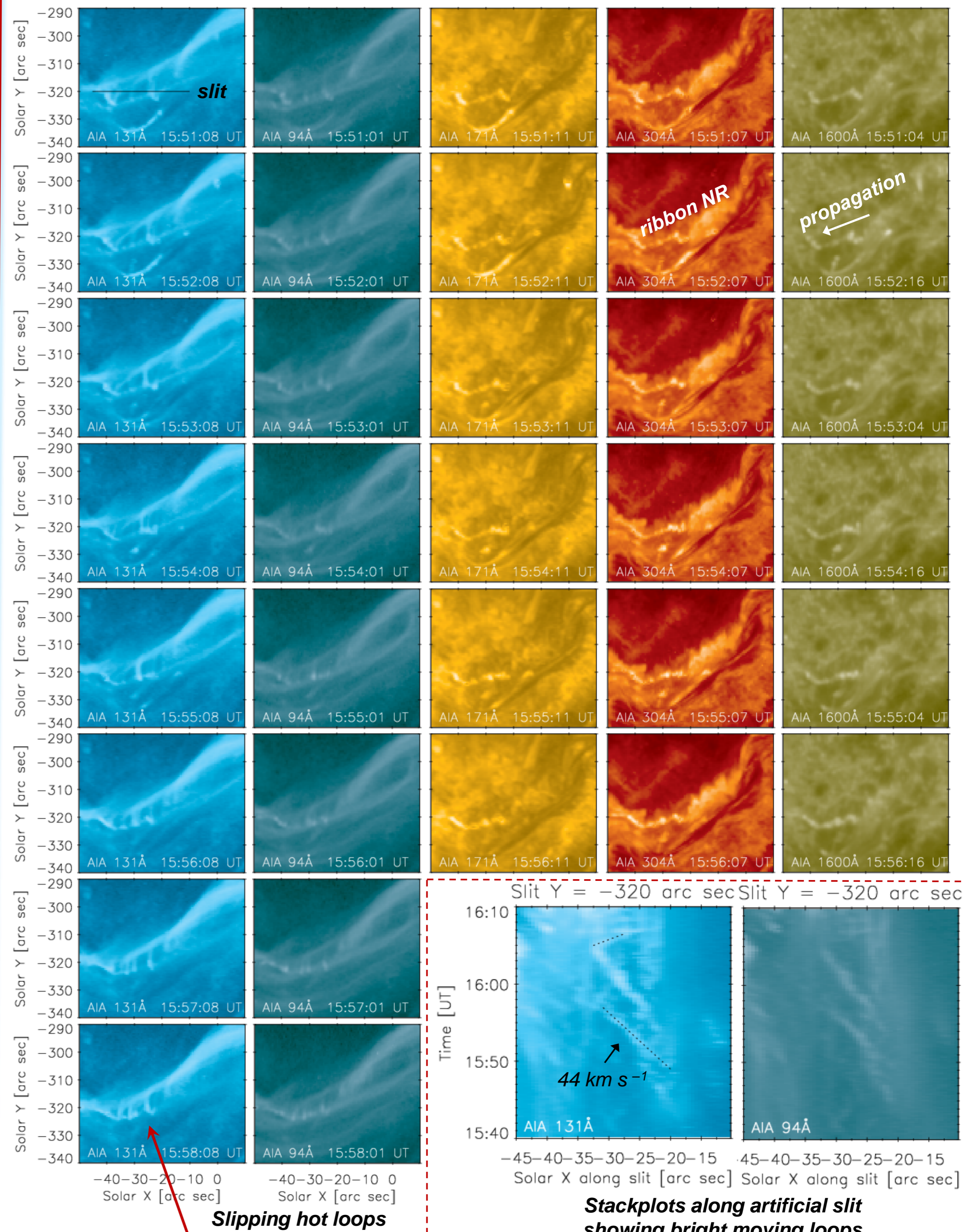
Key Points:

- Filament F1 does not erupt, stays visible even at 16:25 UT
- Some hot loops (Arrow 2, AIA 131Å) grow, slip along PRH, and erupt
- Multiple slipping events (one example on the right)
- Brightenings moving along ribbons in AIA 1600Å are footpoints of hot, ~10 MK slipping flare loops (AIA 131Å)
- These hot loops emit in Fe XVIII – Fe XXI (below) – Fe XXIV

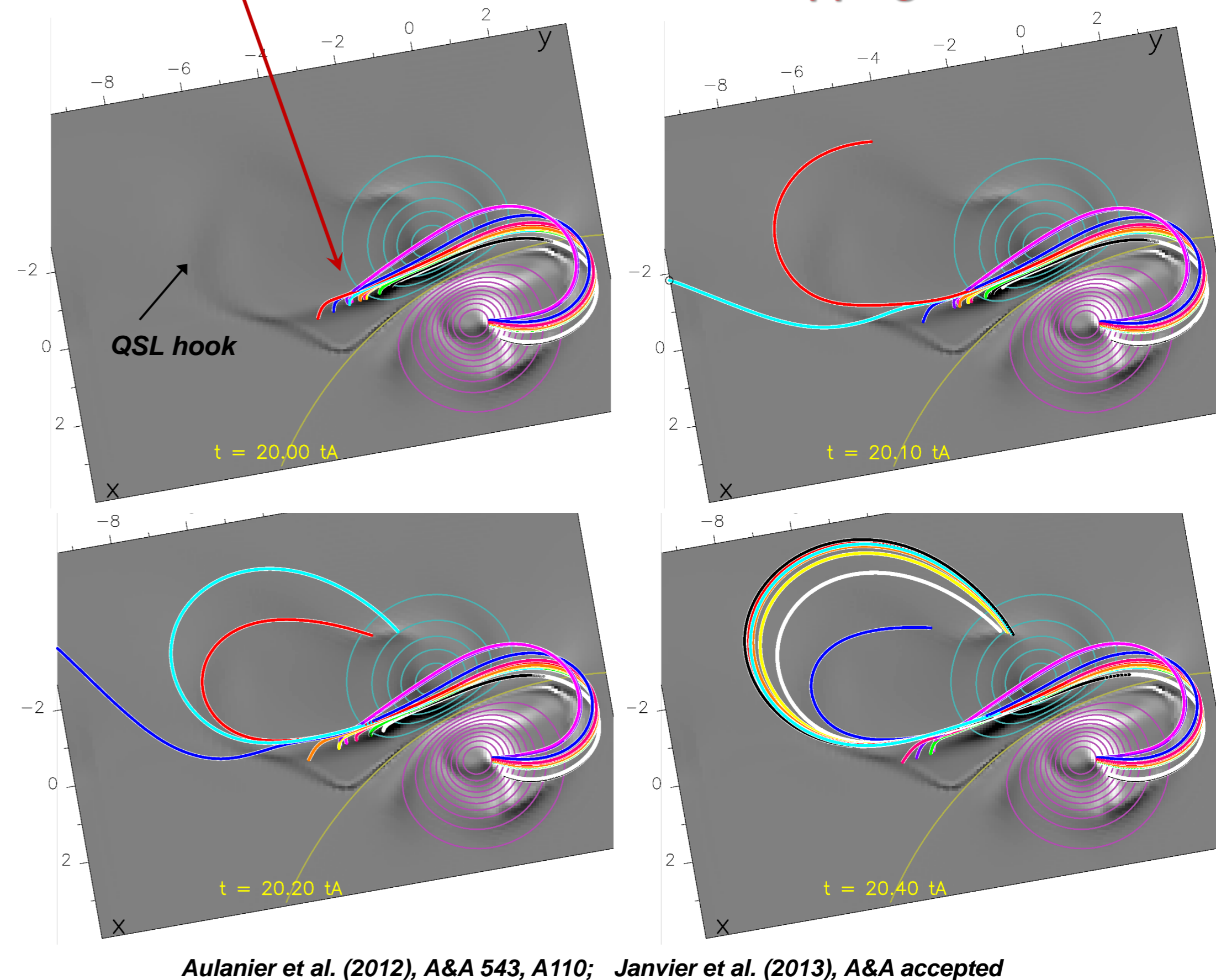
Fe XXI emission from DEM reconstruction



Slipping hot loops – an example



MHD Flare model - Slipping reconnection



Aulanier et al. (2012), A&A 543, A110; Janvier et al. (2013), A&A accepted

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